

AMERICAN

CINEMATOGRAPHER

The Motion Picture CAMERA Magazine

February,
1936

Published in Hollywood,
by
American Society of
Cinematographers

25c



this issue

Process Shot Economies
Shooting Color Stills
Remote Control for Follow Focus
Rapid Processing Methods
... and other features

ANNA KARENINA
 THE HEADLINE WOMAN
 THE EAGLE'S BROOD
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 WASTELAND
 ACCENT ON YOUTH
 FATHER BROWN, DETECTIVE
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 \$30 A WEEK
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 ONE HOUR LATE
 LIGHTNING STRIKES TWICE
 ROBERTA
 BEHOLD MY WIFE
 VAHESHA, HER LOVE STORY
 THE WEDDING NIGHT
 RUGGLES OF RED GAP
 NAUGHTY MARIETTA
 THE MARRIAGE BARGAIN
 THE CASINO MURDER CASE
 PORT OF LOST DREAMS
 PRIVATE WORLDS
 WILDERNESS MAIL
 BEHIND THE GREEN LIGHTS
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 HIGH SCHOOL GIRL
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A Technical and Educational publication
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Published monthly by the
AMERICAN SOCIETY
OF CINEMATOGRAPHERS, INC.
6331 Hollywood Boulevard
Hollywood, California

Telephone GRanite 2125

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- You will want for further installments of the article by Parker and Crabtree on Rapid Processing Methods. This is a thorough treatise on developing film that will give you much information in this one series of articles in fact it covers many related items that have before not been combined under one heading.
- Dr. Meyer will continue with his absorbing series on Controlling Correct Photographic Reproduction.
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ESTABLISHED 1919 Advertising Rates on application
Subscription U.S. \$2.50 a year; Canada \$3.50 a year;
Foreign \$5.50 a year. Single copies 25c; back num-
bers 30c. Foreign single copies 35c; back numbers
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"Process-Shot"



Above: Just before the miniature rowboats were blown up. Below: Tense rowboat, and ship and all miniatures

FOR a number of years, Warner Bros. Studio officials had wanted to film Rafael Sabatini's novel, *Captain Blood*. It was one of the most interesting story properties acquired when Warners took over the old Vitaphone Company, full of swashbuckling action and romance. The famous pirate tale seemed sure to appeal to a public fed up with gangster-films and synthetic sophistication. But one apparently insurmountable obstacle stood in the way: the tremendous expense of filming sea stories. Time after time the project came up for consideration, and with unfailing regularity was wrecked on the reef of dollars and cents. At least three completed shooting scripts were written in hope of finding a way to film the story without collaring a budget that would rival the national debt.

As the book was written, not less than five seventeenth-century ships—frigates, galleons, and so on—would be required. Successive adaptations cut this number down to three, and at last two, but even so the cost of building and using two full-size frigates would be heartbreaking. The most conservative estimate offered at the studio's budget meetings placed the construction cost of two such ships at \$120,000.00. The cost of photographing the scenes could hardly be estimated, for it depends too largely on the vagaries of wind, wave and weather. At best, it would be a lot

(it means less than some studios spend on a whole feature production); at worst, the cost could reach a staggering total. Top-drawer filming sea stories, ships have been built and manned and sent to sea with an expensive cast and technical crew, camera-ships, standby launches, tugs, etc., etc., to sail up and down the Pacific for six months or more looking for the right weather—while the overhead mounted merrily to the tune of several thousand dollars per day.

Then there were naval battles, bombardments, and the sinking of at least two ships to consider. These are tricky things to stage, they may photograph satisfactorily, and they may not; you can't tell until you've done it—and there can be no retakes. When Vitaphone made the silent version of *"Captain Blood,"* twelve years ago, they used full-scale ships. One of them—"Blood's" own pirate craft—was sunk to make the climactic thrill of the picture. In spite of all their preparations, the scenes didn't come off wholly satisfactorily. Nearly two tons of 100% dynamite exploded in the ship. The blast should have sunk her—but it didn't. The ship went down—but not all the way down. Half the dramatic "punch" of the scene was lost, and there was further trouble with the government inspectors, who ruled that the hull was a menace to navigation. The sinking had to be completed—this time without benefit of cameras. Actually, the government charged the studio for completing the sinking.

Another sequence—one which couldn't be eliminated—called for a gunner aboard the ship to fire and destroy a fleet of rowboats with the ship's cannon. That was a nice problem in itself; it would be easy enough to blow up one boat with a bit of dynamite, and there are still stout men who would be willing to men the boat. But with those men in the water, how could you blow up the other boats? Water conducts explosion-shocks amazingly; an explosion that would blow up a rowboat would be enough to break or at least the legs of any men in the water within a hundred-foot radius. So you could add to the expense of building a big set for the town of Port Royal and chartering a steamer to carry the company to a distant location for the job, a nice set of hospital bills—if you didn't find yourself with some damage suits on your hands.

Decidedly all this would run into money—too much money. Adding them to the normal cost of production, anyone could see that the total cost of making the picture would come within speaking distance of the two million dollar mark. And the executives didn't care to spend that much money on the single picture.

Thanks to modern special-process cinematography, *"Captain Blood"* is now on the screen. "Process-shots" and miniatures took care of all those costly and dangerous sequences. The total cost, including the routine process work that would have been required for the film under any circumstances, was but one-fifth the cost of merely building full-scale ships. Comparing this with the estimated cost of merely building two boats (not photographing them), this shows a net saving of nearly \$100,000. This included building three boats (not two), in miniature, photographing the battles, etc., and sinking one ship. No member of

Economies Made "Captain Blood" Possible

by
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Director of Scientific Research
Werner Bros.-First National Studios

the troupe got nearer the ocean than a few days of location work basking dramatic scenes of Laguna Beach. No full-scale ships were used, even the town of Port Royal and the island of Virgin Magro were for the most part in miniature. And no one was hurt in filming the thrill scenes.

The dramatic action laid aboard ship was filmed on one of the stages, where the main deck of the ship was recreated. When the ship was "at sea," ordinary sky backings and process backgrounds took care of the background. When the ship was in port, or bottling other ships, the familiar projected-background process was used, the background keys being made in miniature. A relatively small set, built around the studio tank, took care of the few intimate shots of the principals at the town's waterfront. Port Royal was twice bombarded—once by Spanish privateers, and once by a French fleet—but the bombardment was carried out in miniature. Some of the latter scenes, thanks to a combination of miniatures and various composite processes, even showed real people in the village being crushed by the fall of miniature buildings.

There is one scene which shows Lionel Atwill, who plays "Colonel Bishop," getting into a small boat to be rowed out to the captured Spanish frigate. The boat Atwill enters is a real one—but the one which rows out to the ship is, like the ship and the town itself, a miniature.

In the same way, the sequence where the rowboats are blown up was done in miniature. Tiny figures rowed the model boats across a tank toward the miniature frigate. At the proper moment, a miniature cannon was fired from the ship, and a well-timed blast smashed the boat. This would have been very difficult to do in full-scale, and probably would have cost ten or fifteen times as much as our miniature did, without being a bit more effective. As I have pointed out, done in full scale with real men, this shot would have been very dangerous, as it was, we found it nearly impossible to injure our tiny dummies.

The big battle, in which "Blood," with but one ship, fights the French fleet bombarding Port Royal, is another combination of miniatures with intimate action photographed on the stage. The ships themselves were of course miniatures and projection-background "keys" of them made

the scenes showing the principals aboard "Blood's" ship very convincing. The long-shots of the battle, as well as the bombardment of the town were, of course done in miniature. This sequence was essentially conventional miniature technique with special attention paid to camera height, choice of lenses and camera-stands, to assure a really convincing effect. Half the shortcomings of ordinary ship miniatures may be traced to carelessness on one of these points, especially getting the camera too high. After all, one is trying to reproduce the effect of full-scale action seen from a normal viewpoint, if the camera is placed higher than what would be, relatively, the normal viewpoint for the reduced scale of the miniature, the shot on the screen will look palpably synthetic. Another common fault in ship miniatures is having a superabundance of detail. All that is necessary is to reproduce the detail one would normally see looking at a real ship from the distance represented by the miniature shot. If you are far enough away to take in the whole ship at a glance, you aren't conscious of every mast, nail, rope and pulley, nor can you count the freckles on the bo'sun's nose. You don't need them in your miniature either!

In this particular case, we developed one idea which made the battle much easier to film. In most miniature battles, the tiny cannons are built permanently into the ship, and fired electrically from an organlike keyboard. After the guns have all been fired, the cameras must stop, and everything waits until the guns are loaded again, which is a time-consuming process. Our guns were interchangeable when one "take" was finished, all that was necessary was

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Above: The miniature battle. Below: Bombarding Port Royal. Town and ship are miniature, but real people move along the waterfront.



Shooting Color Stills for Production

by
Eugene Robert Richer, A. S. C.

SONER OR LATER, the majority of motion picture stills will have to be made in natural color. More and more productions are being filmed in Technicolor. More and more newspapers and magazines are demanding natural-color photographs for their illustrations and covers. Most exhibitors, too, would infinitely prefer color stills for their lobby-displays. Inevitably, then, our stills will eventually be made in color to meet these demands.

Natural-color still photography is no longer an experiment. A glance at the illustrations and ads in any of the "class" magazines will show that. Direct color photographs are being made and used commercially; you can take your choice between glass or film transparencies and paper prints made by any of a half-a-dozen or more processes, and be sure that if the photographic and laboratory technique is good, you will get a good picture.

But there is a great difference between the commercial color-photography now practiced and the mass-production methods that must be used in turning out motion picture stills. There's a world of difference between the \$3,000 advertising job where one perfect picture constitutes the whole order, and the ordinary major-studio job of a couple of hundred production-stills, each of which gets an order of 30,000 prints! The real problem we in the studios face is

not choosing or developing a color-still process, but adopting the excellent processes already available to our mass-production needs.

The Paramount Studio's still department, under the direction of Harry Cartell, has for some time been wrestling with this problem. While none of us care to claim that we've reached the final solution, the results have none the less been gratifyingly successful. Our effort has been solely to adopt an established process to the requirements we knew from practical experience in studio still work, must be met.

The process we have been using produces three color-separation negatives at one exposure, using a camera working on much the same principle as the Technicolor three-color one-camera. In other words, the red and blue separation negatives are made in a bipack, while the green is separate. Printing may be any one of several established paper-print methods. These prints, though beautiful, are far too expensive to be considered for our purpose; a single 8x10 print may cost from \$20 to \$25 or more. Cartell, therefore, surveyed the field to see if some more suitable method were not available. He found it in photo-lithography. Working from our three separation-negatives, excellent lithographed reproductions can be made at a cost (in quantity) of at least comparable to black-and-white, if not actually lower. Primary estimates, based on a volume of 30,000 to 40,000 prints per shot, indicate that first-class, three-color litho-prints 18x10! can be had for about 3 1/2 cents each!

My own connection with the work has not, however, been so intimately concerned with this phase as with the actual photographing. There are naturally many practical differences between working in black-and-white and working in color; the whole thing may be best summed up by saying that for success in color, one must pay careful attention to details which are relatively unimportant in ordinary still work.

For instance, even in the routine matter of loading the plateholders, extra care must be taken. Studio loaders, long accustomed to handling ordinary film carelessly, must be schooled to handle the color-films only by the edges, for fingerprints which would be unnoticed in black-and-white, or which could easily be removed by the retoucher, stand out glaringly in the almost unretouchable color prints. Conditions in the loading-room and dark-room which would be quite possible in ordinary still work are impossible when working with color. There should be no dust in the air, nor any on the floor to be stirred up into the air when color negatives are being handled.

In making the exposure, the still photographer has the advantage over the cinematographer. Instead of having to use more light to compensate for the color-camera's beam-splitter and filters, he can simply increase his exposure a bit. So in making production-stills in color, he usually been able to step right up and shoot almost as though he was shooting black-and-white. The Cinematographer's lighting is usually about right for my shot, and the camera-filters can be balanced for incandescent light. Exposure must be more accurate than in monochrome.

As to lighting, I've found that the best results usually come with softer, flatter lighting than would be normal for black-and-white. Heavy shadows are simply out for color; they go a dead black in your picture, and are disturbing. Very "hot" highlights frequently tend to wash out and glare so they too should be avoided. The picture should be lit as evenly as possible, but this doesn't rule out a good, normal balanced lighting, with one side slightly highlighted, the other slightly shadowed. But neither the highlights nor

shadows should be extreme. In shooting color stills on the set, the change I've most frequently had to make is the lighting was to throw more light into the shadow-side than the Cinematographer used in his black-and-white picture.

Backlighting in color is debatable. Sometimes it is very effective, but it's easily overdone. When in doubt—don't backlight.

The same principles hold good for exteriors in color. I've gotten some very fine results working in the shade, with reflectors. We've used ordinary silver reflectors, and found them even more important in color than in monochrome.

And in color work, you run into an entirely new problem in reflection: the color reflections thrown on your subject by the background, and even from the clothes they are wearing. This is a most important point to watch. Some colors, of course, reflect more strongly than others, and some of them can give very unpleasant effects. The two worst offenders, I think, are red and blue. Red reflects and photographs very potently, and blue a photographic enemy No. 2. Green is only rarely troublesome in this respect, and yellow seems quite harmless. In one portrait I recently made of one of our stars, I had a red background, and the lady was wearing a blue costume. The red of that background seemed to kick back onto her from every angle, and the blue dress threw a bluish tint upward upon her throat and the lower part of her face. The picture would have been far better if I had not had these particular colors to cope with that way. Reds and blues can of course be used—but whenever it is at all possible, the shot should be planned beforehand so that you'll have the minimum of color-reflection.

With any good three-color process, you'll get pretty accurate renditions of most colors. There are a few, though, which should be watched carefully. Greens, for instance, are often tricky. Especially in shooting exteriors out here in California, the greens of foliage are very deceiving; they often turn out to have a lot of brown in them that isn't noticeable to the eye. Other colors sometimes have peculiar psychological effects on different individuals. Reds, for instance, are very irritating to some people, blues depress others, and so on. Reds, and certain shades of blue often stand out more strongly in your picture than they do visually. They attract the viewer's eye—so they should be taken into consideration when planning the composition. A touch of red which might be unnoticed when you made the exposure can very easily disorganize your whole composition.

There is no objection to the statement that color must be composed as carefully as any other element in the picture. We have already learned from painful experience that a misplaced highlight or shadow in a black-and-white picture can draw the eye away from what we want it most interested in, and that a careless arrangement of lines or masses can throw the picture out of balance, or make the viewer look at anything but the subject. With time, mistakes and experience, most of us have through the years learned how to make these matters of light and shade, tonal gradation, lines and masses work for us, rather than against us. Color is just another of these factors which must be controlled.

All of this calls for more careful planning when you are shooting stills. Exposure, lighting, composition and coloring have to be exactly right, or you might better not make the shot. You can't step in hurriedly and "knock off a still," as you would in black-and-white. This is a factor which will probably correct itself in time. In portraits, one generally has a chance to take things seriously. A little more thought and color-portraiture is as sure—and vastly



Dr. L. M. Dietrich Passes On

ON DECEMBER 29th Dr. L. M. Dietrich, A.S.C., passed on at the age of 69. The direct cause was attributed to heart attack.

But men like Dr. Dietrich do not die. His life was too full, too active and we might say too generous. It was not the kind of fullness that measured itself by dollars, but a fullness that measured the respect and love of all those whom he knew and with whom he associated.

For almost a decade he had been associated with the hurly burly motion picture industry, devoting his time to the perfection of a lens that would have given his fellow workers in the American Society of Cinematographers an instrument that would have saved their task, that would have simplified their work. Previous to that he gave his talent to the automotive industry and contributed several important mechanical improvements. Before coming to motion pictures he was with the Cadillac engineering staff.

Many of his articles enriched the columns of this magazine. For a number of years he served in an editorial advisory capacity to the editors of the American Cinematographer, giving of his time of his knowledge and kindly wisdom.

While Dr. Dietrich has passed on, he will never leave us. We will always have the beautiful memory of a gentleman who unselfishly served his fellowmen.

Problems of Controlling Correct

Photographic Reproduction

PART 3

THE photographic characteristics of positive film being used at present in professional motion picture work are to a large extent standardized. There is little appreciable difference in speed and slope between the competitive types, and this is very gratifying to the laboratory as it permits establishment and maintenance of constant conditions in printing and printing equipment.

The same uniformity, however, does not prevail in the various negative products offered to the market. The reason for this difference is that the principal characteristics required of negative material cannot be perfected in the manufacturing process without the partial sacrifice of other characteristics. Furthermore, with very little exception, a single all-round negative type has been used for general photographic work since the introduction of the Pan-chromatic Super-speed type, while the variety of problems and tasks to be solved and performed could easily absorb several types of negatives with marked differences in photographic characteristics.

The laboratories processing the negative and print could reasonably object to such variations in negative film, as the existence of such types demands special handling of each type in development, which, of course, would present difficulties in view of machine development. As most laboratories are using single strand machines, it is not impossible to change developing time in order to secure ideal conditions for the rendering of proper contrast in different film types, as this is practically done at present in all laboratories which prefer and employ the "test system" to the "time and temperature system."

The consistency of the negative developer is checked and kept constant by gamma control, and in Hollywood laboratories this gamma value has been generally set at approximately .68 plus minus .05.

The two developing systems referred to in the above are based on two different principles for controlling photographic reproduction of visual contrast as far as the negative processing is concerned.

In the "test system," negative tests exposed by the cameraman at the start of every scene which entails a changed lighting condition, are developed at an average standard time, and from a visual examination of each test the developing time which will render the best possible contrast and density in the corresponding actual negative scene is determined. This method, therefore, undertakes to keep negative contrast in each scene constant by varying the developing time and the developing gamma correspondingly.

In the "time and temperature system," the principal developing factors, time and temperature, and the developing gamma are kept constant. In this case it is entirely the cameraman's responsibility to control proper reproduction of contrast and brightness level by his lighting technique.

Theoretically, it should stand without argument that the "test system" be given unanimous preference in view of the additional help it offers to correct mistakes made by the cameraman in calculating exposure and lighting effects, which were, no doubt, made possible by the absence of proper methods or instruments for determining all existing relations between visual contrast and negative characteristics.

The decision in favor or against either of the two systems, however, is influenced by many practical factors, the

discussion of which is not within the scope of this article.

While all laboratories, regardless of the developing system adopted, are accustomed to relying upon negative selection control with a fixed gamma value which is a characteristic, of course, of the film type used in connection with these control tests, it is frequently noticed that this procedure tends to form a habit which may unjustly become a reason for condemning film types differing in gamma from that of the film used for these control tests. This is particularly true of laboratories employing the "time and temperature system" when a difference in gamma is noticed while testing a new product against the control-test film type, it seems to upset the principle of consistency of developing time or speed so essential for this system of development. It has recently been proven, however, that adapting the developing speed to the inherent gamma-time characteristic of a new film type, like Super X for instance, is not impossible for either of the two systems, and the initial difficulty encountered is rewarded, when overcome with gratifying results.

On the other hand, there is equally no reason why negative types, which sensitometrically show a reasonably higher gamma than .68 when developed at standard machine speed, should be rejected. The scale of contrast variations, existing either in outdoor lighting conditions or produced artificially by indoor lighting, varies to such an extent above and below medium contrast that there are many cases in which, due to low contrast in an object, a reasonably higher gamma characteristic of a negative film type might be advantageous, while in other cases where high contrast prevails in the object a reasonably lower inherent gamma characteristic will be found to render better results.

This, of course, is only true when speaking of that part of photographic reproduction where a distortion of brightness relation or contrast is desired, and not where the task consists of photographically reproducing the correct visual brightness in the object.

In general the negative type with a higher gamma characteristic for a fixed developing formula has obviously more practical latitude in development as that of a type with lower gamma infinity of the higher gamma infinity is not accompanied by too much lock in shadow fixed. It is always possible to lower the gamma by shortening the developing time and increasing the exposure or shadow lighting, while it is not possible to raise the gamma value over

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by
Dr. Herbert Meyer, A.S.C.
Head of Hollywood Research Bureau,
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Assistant cameraman seated in foreground builds remote focus-control.

Following Focus By Remote Control

by

William Stull, A.S.C.

EVER since sound and the moving camera joined forces, the problem of "following focus" has been abnormally complicated. On the one hand, camera technique required increased flexibility in this operation, on the other, sound demanded complete mechanical insulation between the camera and its blimp. A further complication was the fact that save in rare instances, such as the recently developed Twentieth-Century Fox Camera, conventional lens-mounts do not admit a uniform movement and calibration of the external control for lenses of different focal lengths. The commonest mechanism used is probably the type which operates through standardized gears on the lens-mount, and provides an external scale which is marked in terms of each scene's individual focal positions at the time the scene is made. Other types use individual cams for each lens, often with a cam-and-roller arrangement which automatically adjusts the finder for focus and parallax as the lens is focused. In some designs, these cams are permanently attached to the camera, and swing into and out of position. In others the cams are separate, and when changing lenses the proper cam must be inserted. In nearly every case the follow-focus device leaves something to be desired from the viewpoints of both operating efficiency and sound-insulation.

The Technicolor Motion Picture Corp. is designing the Technicolor three-color camera, reached a novel, yet very practical solution of this problem. A camera through which

three films run simultaneously can hardly be expected to be as quiet as a conventional design, the soundproofing blimp therefore had to be extremely efficient. One of the first specifications for the blimp was that there be absolutely no metallic contact between the camera and the blimp. This meant that conventional focus-control mechanisms, which all involve some form of direct contact between the external control and the camera, could not be used. None the less, the nature of color cinematography called for an unusually precise control of focusing.

The solution reached by the Technicolor engineers is beautifully simple: if mechanical linkage is ruled out, an electrical control should fill the bill to perfection. Technicolor cameras are focused electrically, by a control which may be operated at the blimp itself, or from a point several yards distant.

The control is operated by a pair of tiny Selsyn interlock motors. One of these is attached to the external operating control, the other operates the focusing of the lens. Both motors are excited by the same electrical current, which may be the convenient 110 Volt Alternating Current available on most stages, a line from a sound-truck's power-supply, or an location "wild" shot from a convenient battery-end-converter outfit. When two Selsyn motors are excited from the same current-supply, they automatically synchronize themselves, if the shaft of one motor moves that of the other or once moves in the same direction and degree. Either of the two may be the driving motor.

In the Technicolor installation the shaft of the outer motor is connected to the focusing crank, while the shaft of the inner motor, which is mounted on the camera, is geared to a conventional ring-gear on the lens-mount. When the current is off, the two work independent of each other, but when the current is turned on, they automatically synchronize. The outer control may be a turn or so out of step with the lens-control but as the current comes on it jumps forward or back as the case may be, until synchronism is established. Thereafter, either shaft may be moved, and the other moves with it.

The focusing dial is unusually large, and fitted with a fixed pointer running in a spiral track on the rotating dial. The movement of the dial is controlled by a small crank which is geared to the shaft of the Selsyn motor. The movement of the crank for any focal adjustment is about double that ordinarily provided in conventional mechanisms—a feature which simplifies minute focus-changes.

The focusing dial is faced with plain white celluloid, rather than permanently calibrated. Thus the dial may be marked for each scene in terms of actors' or camera positions, and there is no chance of error due to multiple calibrations for lenses of varying focus. The lens-mounts themselves are, of course, calibrated very accurately.

In use the focus control may be left in its dovetail-clipped mount on the left-hand side of the blimp, or it may be removed entirely, connected only by a length of light cable, leaving the assistant free to take any position from which he can see the action clearly.

The Technicolor blimp and finder system are also worthy of notice. The blimp is of an unusually good sound-absorbing qualities, and most convenient for the camera crew. An interesting feature of the design is that the window on the left side of the blimp, which gives a view of the lens-mount and its calibration is fitted with a magnifying lens rather than a plain glass, making it very easy to read the focusing scale, diaphragm setting, etc.

The finder departs radically from usual practice. Due to the size of the blimp, a conventionally mounted finder

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TABLE I
Developed Characteristics of Rapid Developers with
Eastman Super-Sensitive Panchromatic Cut Film
(July, 1935) at 65° F.

Developer	Time	Gains	For	Relative Emulsion Speed ^a (Per Cent)	Highlight Density
D-82	1 Min.	0.57	.12	85	0.73
D-82 + caustic	1 Min.	1.00	.15	105	1.33
D-9	1 Min.	.55	.10	90	.70
D-9 + formalin	1 Min.	.52	.12	70	.63
D-8	1 Min.	1.29	.12	35	1.04
D-72	1 Min.	.40	.12	65	.50
D-82	2 Min.	.83	.12	125	1.15
D-82 + caustic	2 Min.	1.35	.21	125	1.88
D-9	2 Min.	.89	.12	110	1.19
D-9 + formalin	2 Min.	.81	.14	75	.98
D-8	2 Min.	1.49	.15	60	1.54
D-72	2 Min.	.70	.13	85	.96
2-Bath (1st bath 17½% F.I.)	1 Min.	.45	.15	105	.91
D-82	3 Min.	1.01	.17	130	1.45
D-82 + caustic	1 Min.	1.00	.15	105	1.33
D-9	2½ Min.	1.02	.14	110	1.40
D-9 + formalin	3 Min.	1.00	.17	75	1.20
D-8	40 Sec.	1.00	.11	30	.75
D-72	3½ Min.	1.02	.17	100	1.30
Two Bath					
1st Bath	1 Min.				
2nd Bath	1 Min.	1.00	.25	105	1.35
1st Bath	1½ Min.				

The relative emulsion speeds are expressed in percentages the speed obtained by developing for 3½ minutes in D-72 (gamma 1.0) being taken as 100%.

WITH the increasingly widespread use of photography, situations are occurring more and more frequently when it is desired to obtain the finished photograph in as short a time as possible after the negative is exposed. In the past, this situation has often arisen in news photography but with the more recent applications of photography as, for instance, in such fields as television and the photographic recording of the finish of horse races, the need for rapid processing is becoming more and more important.

Most of the published procedures for rapid press photography involve the use of quick acting developers and fixing baths of more or less conventional composition, followed by a brief wash. The print is then made directly from the wet negative or after the negative, which was hardened during processing, has been dried rapidly.

The rapid drying may be accomplished either by directing blasts of warm, dry air against both faces of the gelatin film, by removal of the water by means of a volatile solvent such as alcohol, or by absorption of the water with a suitable strong solution having an affinity for water, such as a saturated solution of potassium carbonate. The treatment with alcohol is not recommended for use with film since methyl alcohol attacks the film base, tending to make it curl and buckle on drying. Ethyl alcohol can be used successfully, provided: (a) the film is not bathed in the alcohol for too long a period which would otherwise cause buckling, (b) that the alcohol is diluted with 10 per cent of water, and (c) that the film is finally dried with air at a temperature not greater than 70° to 80° F. The use of undiluted alcohol and/or which is too hot causes excessive desiccation of the gelatin which renders it aplescent. The

Rapid

aplescence can be removed by soaking the film in water and re-drying slowly.

When the emulsion is dehydrated with a saturated solution of potassium carbonate, traces of the carbonate are left in the gelatin so that if the relative humidity is very low, it may crystallize, while with high humidity the negative remains sticky. Also, it is necessary to rewash and dry the negative in the usual manner after the rush prints have been made. It is safer and more satisfactory, therefore, to dry the negatives with hot air.

A satisfactory rapid processing procedure for news photography should fulfill the following requirements:

(1) In order to reduce to a minimum the time required for making up the baths, they should be in the form of stock solutions ready to use with very little measuring, mixing, or diluting.

(2) In order to save the time required for cooling the solutions, it should be possible to use them over a range of temperatures at least from 65° to 80° F.

(3) In order to lessen the danger of mechanical injury to the emulsion and to allow rapid drying with hot air, the solutions should not have a great tendency to swell the emulsion and should harden it thoroughly.

(4) Photographically dry rapid method to be satisfactory, should give good picture quality with high emulsion speed, since underexposure is very apt to be encountered.

The three hand processing methods to be described meet these specifications quite well, each method having some specific advantage under certain conditions.

Two-Bath Development with Developer D-8

For the majority of cases a rapid two-bath hardening developer is satisfactory since it prevents excessive swelling, provides rapid and thorough hardening of the gelatin while in the developer, and allows the use of comparatively high processing temperatures. Also, it automatically eliminates the danger of over development and provides an almost constant degree of development in spite of variations in the time of treatment which can otherwise easily occur in hand processing for such short times.

The film is placed in the bath No. 1, whereupon the emulsion absorbs a certain quantity of the solution and thus a definite quantity of the developing agents, but because of the low alkalinity of the solution, very little actual development occurs. Then, when the film is placed in the alkaline bath No. 2, development proceeds rapidly at first, but since the developing agents diffuse out from the film, after a short time the development practically stops. The result is that considerable variation in the times of treatment have very little effect on the degree of development.

Also, the absorption of the developer chemicals into

Processing Methods

by

H. Parker and J. L. Crabtree
Communication No. 577 from the
Kodak Research Laboratories

Two baths makes it possible to use formalin which gives a rapid and high degree of hardening in alkaline solutions, while avoiding the troublesome reactions that otherwise occur between formalin and the developing agents in a single bath developer, which tend to reduce the rate of development and often cause bad aerial fog and stains.

The formulas for the two bath SD-6 developer solutions are given in the section on practical recommendations. Sodium sulfite is used in the first bath to prevent excessive swelling of the gelatin emulsion before it can be hardened by the formalin in the second bath. The small quantity of phenosulfonate is a safeguard against the formation of aerial fog which might otherwise occur if, during treatment, the film were exposed much to the air. A portion of the formalin in the second bath reacts with the sulfite, liberating sodium hydroxide so it is not necessary to add any additional alkali. The two solutions used to prepare both No. 2 slowly deteriorate when mixed and, therefore, the bath must be used within a short time after it has been mixed, but the separate solutions keep well before mixing.

The film should be bathed for one minute in both No. 1, then transferred to both No. 2 without rinsing and kept thoroughly agitated therein for one minute, taking care not to expose the emulsion surface to the air, otherwise aerial fog is apt to be produced. It is convenient to hold the film by one corner with a film clip in order to facilitate handling and allow positive agitation. After development, the film should be rinsed briefly, preferably in an acid stop bath SB-1, and then fixed with thorough agitation to ensure neutralization of the alkali in the film and to hasten fixation. As soon as the film has cleared, it can be washed and dried or printed wet as described later.

The F-5 hardening fixing bath gives excellent results when used after this developer but, if desired, an ultra-rapid non-hardening bath may be used. In the latter case, it is particularly desirable to rinse in the acid stop bath between development and fixation.

Since development is almost complete soon after the film has been placed in both No. 2, the degree of development can not be controlled effectively by varying the time of treatment in the second bath. If a desired degree of contrast is not obtained by normal treatment, development can be altered slightly, say, over the gamma range from 0.6 to 0.7 with Super-sensitive Panchromatic film at 75° F., by changing the time of treatment in the first bath. If a greater increase in the contrast is desired, it can be readily obtained by reimmersing the negative in both No. 1 for a short time after rinsing briefly in water to remove the excess of solution carried on the surface of the film.

When used in tray development, these solutions are not affected by aerial oxidation as rapidly as one equally energetic single bath developer, because the developing agents are held in a weakly alkaline solution and are well protected by the sulfite, while the separate solution containing

TABLE II
Characteristics of Developers Suitable for Underexposures
Time of Development for Optimum Emulsion Speeds

Developer	Time	Gamma	Fog	Relative Emulsion Speed	Highlight Density
D-82	8 Min.	1.20	0.40	155	2.04
D-82 + seulfite	3 Min.	1.50	.40	145	2.25
D-9	9 Min.	1.45	.40	150	2.25
D-8	6 Min.	1.60	.40	115	2.30
D-72	14 Min.	1.33	.40	120	2.07

the alkali contains no developing agents. When a negative is developed, it carries a small quantity of the developing agents into the second bath, but the concentration resulting from this action is low so there will be no danger of staining the film even if the developing agents are oxidized.

Although this system of development is particularly designed for use at high temperatures, it can be used satisfactorily over quite a range of temperatures from 65° to 85° F. Below 65° F., the degree of development is probably too low to be useful, while above 85° F., there is danger of the emulsion swelling excessively. The rate of change of activity with temperature is lower for this developer than for the more usual single bath developers. For instance, with Eastman Super-sensitive Panchromatic cut film at 75° F., a gamma of 0.65 was obtained equal to that given by developing for one minute in full strength D-72, but when both developers were cooled to 65° F., the two bath developer gave a gamma of 0.50 while the gamma obtained in the D-72 had dropped to 0.40. In both cases

Continued on page 56

RAPID TWO BATH DEVELOPER (Formula SD-6)

First Bath

	Ambidapels	Metric
Elan	44 grains	3 grams
Sodium sulfite, desiccated	365 grains	25 grams
Hydroquinone	88 grains	6 grams
Sodium sulfite, desiccated	3 1/4 ozs.	100 grams
Sodium carbonate, desiccated	292 grains	20 grams
Water	32 ozs.	1 liter

Second Bath

	Ambidapels	Metric
Phenolsulfonate (1:1000 sol.)	5 grains	20 cc.
Sodium sulfite, desiccated	1 2/3 ozs.	50 grams
Potassium bromide	30 grains	2 grams
Water to Solution 2B	32 ozs.	1 liter
Formalin (40% solution)	6 ozs.	200 cc.
Water to	32 ozs.	1 liter

To make the second bath, mix equal parts of solutions 2A and 2B

Acid Stop Bath (SB-1)

	Ambidapels	Metric
Water	32 ozs.	1.0 liter
Acetic acid (28%)	1 1/2 ozs.	48.0 cc.

Acid Hardening Fixing Bath (F-5)

	Ambidapels	Metric
Water (about 125° F.) (52° C.)	20 ozs.	600.0 cc.
Sodium thiosulfate (hypo)	8 ozs.	240.0 grams
Sodium sulfite, desiccated	1/2 ozs.	15.0 grams
Acetic acid (28% pure)	1 1/2 fl. ozs.	47.0 cc.
Benic acid, crystals	1/2 ozs.	7.5 grams
Potassium alum	1/2 ozs.	15.0 grams
Cold water to make	32 ozs.	1.0 liter



Alfred Gilks, A.S.C.

A Disciple of Restraint —Is Alfred Gilks

by
Harry Budick

WHEN upper brackets of top-flight ace cinematographers are compiled year after year, Alfred Gilks can be depended upon to have won his way to conspicuous position and rating.

An alumnus of the old Lesky-Vine Street academy of celluloid calistols, he has leased his roseworthy cinematographic career through such early triumphs as *Old Hossford*, down to *Ruggles of Red Gap*, and his latest camera contribution, *The Milky Way*, revealing Harold Lloyd.

A wide variety of dramatic works have paraded his cinematographic instrument from lens to negative, each possessing distinct merit and evident artistic charm. Currently his *Ruggles of Red Gap* is attracting exceptional acclaim as one of the best pictures of the year just past.

Selections naming the so-called best ten pictures of the year are, as this is typed, scruffling from all corners and promise to be as numerous and variable as the All-American

can football selections that blossom forth each late November. But it is significant that whatever source the nomination, *Ruggles of Red Gap* finds prominent place. Critics and reviewers, however they differ on other pictures, appear to be in consensus as to the outstanding merits of this production.

A tribute indeed voluminous for Gilks' unassuming aptness at cinematographic delineation. His portraiture of Charles Laughton is testimony to the wide artistic comprehension of his genius. This noted star is justly renowned for his dramatic roles. Yet in the Gilks vehicle he assumes robes of an innocuous, almost pathetically humorous character. Gilks was able wholly to effect this unusual visual transformation for the actor. His skillful lighting technique never reveals Laughton with a trace of menace, actual or implied. Instead, he clothes his face in a bland, moon-lit inimitance throughout, even during the Gethsemane Address sequence, that captivates audiences and makes the character completely real and believable.

The Harold Lloyd opus, soon to be unveiled to world-wide audiences, presented also situations calling for precise characterization of definite gradations in mood. The comedy sequences performed by Lloyd are done in short, fast cuts. They are on and off the screen in rapid tempo that gives onlookers no time for analytical reflection. They must see the laugh-provoking action. These scenes perform one not only well-lighted but completely lighted as to detail, that the entire picture may be instantly and fully grasped by optical senses of witnesses. But, throughout the picture are many scenes of dramatic value and weight. Mood of these heavier scenes must needs be in accordance to the action and story. Hence, the fast comedy scenes do not be too violently brilliant. Through careful exercise of craftsmanship Gilks has been able to maintain a fine balance and a smooth fluidity not only of movement but of mood.

In all of Gilks' cinematographic contributions, one readily discerns an admirable photographic restraint, a deliberate subjection of camera mechanics to dramatic force and expression. One is never abruptly conscious of the constant presence of a camera. His plots unfold naturally and gracefully. He never employs an impressive cinematographic effect for its own technical sake, one that is a camera triumph but which diverts attention from the scene itself. He can be trusted never to kill a scene photographically, but to accentuate its screen value and to bring it out vividly.

Prevailing problems of studio practice he meets with practiced ingenuity. His technical mastery of the physics and chemistries and instruments of his profession is comprehensive. Not a medium of this command of available media is based on a most valuable experience some half-dozen years back.

For nine months he cruised around the world with William K. Vanderbilt on the yacht of that collector of acrobatic photography. With camera, Gilks captured scenes in hidden corners of the world, many of which had never before been imaged by motion picture explorers. He was thousands of miles from his laboratory base. He took scenes under blazing tropic suns beaming on mirroring seas. He penetrated deep, dark jungles and in murky rain took scenes never again to be visited. Under conditions ranging from one cinematographic extreme to the other he performed, with no daily laboratory reports to guide, relying entirely upon his own professional skill and ingenuity, and lost not a single foot of film through inadequate handling. A most exceptional achievement and one that minimizes even the most perplexing studio problem to comparative fundamental proportions.

Continued on page 60

STAR PERFORMER

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Problems of Controlling Correct Reproductions

Continued from page 52

that inherently characteristic for the given type, at least not without an objectionable increase in grain.

One important characteristic of the negative material is its sensitivity to light or radiation. This sensitivity is usually classified in

a. general or blue sensitivity, referring to the original sensitivity of the silver bromide to radiation of shorter wave lengths; and

b. color sensitivity, referring to additional sensitivity of sensitized silver bromide to radiation of longer wave lengths.

When comparing sensitivity of different negative types by either regular pictorial exposure tests or by spectrometric methods, a distinction between the two components is usually not made and the results then refer to overall sensitivity only.

Correct determination of overall sensitivity should always be made by developing the test types in question to identical gamma values. In case this is neglected and the gamma values are different, the comparative speed figure will change its value with every density step. When the different types are developed to identical gamma values, the speed relation is constant over the entire range of the straight-line portion and the only possible variation of this speed relation that might be encountered is where the extension and the shape of the curved parts vary.

For practical reasons it is therefore, advisable, when making comparative tests of overall sensitivity, to distinguish between a speed figure relative to a speed comparison of the straight-line portion measured for equal gamma values and a speed figure relative to the speed comparison of the curved portion which practically takes into consideration the toe section only and which, therefore, is identical to a combination of threshold and shadow speed.

An additional way of expressing speed comparisons of negative types which is commonly practiced, is that of indirectly calculating negative speed from the printer lights required to give a normal print of each negative. As the printer light in general is selected with the intention of giving the print sufficient detail in the high lights this method of speed calculation refers principally to speed comparison for high negative density portions.

Another characteristic important in the consideration of our problems is the latitude of the negative material expressed by the extension of the straight-line portion. Normally it should be assumed that the farther the straight line portion extends towards the upper end of the characteristic curve, the better it should be regarded in view of the pro-

tection it offers against wrong calculation of exposure. In practice, however, it will be found that the laboratories quite often prefer a negative type with a relatively low shoulder break. The reason for this is that the exposure range of the standard Bell & Howell printer with 22 printer lights has a rather limited latitude, and that, therefore, naturally the danger of encountering high-contrast of unprintable high density is emphasized in cases where negative types are used with high shoulder breaks. The new automatic Bell & Howell printer has an increased range of printer lights which in itself should be considered a needed improvement and a step forward.

The next article will deal with color sensitivity of photographic emulsions in relation to visual sensitivity.

Shooting Color Stills

Continued from page 51

more effective—than black-and-white. As to production-stills, color will probably be used first largely on color films, and while color cinematography is yet so new, everyone in the troupe is willing and eager to work more thoughtfully, even if slower. When color comes to the making of production stills for monochrome productions, the still man will simply have to demand more consideration. The material before his lens—sets, costumes, etc., as well as lighting and subjects—will have to be coordinated for color as well as for black-and-white filming. Some modification will have to be made in makeup at present, for color we find a lighter street makeup photographs best, regular monochrome makeup, as is used in black-and-white sets, photographs exactly the same unnatural ruddy brown it appears to the eye. Above all, the color stillman will have to receive more time and thought from the other members of the troupe. But all of these things will surely remedy themselves as we accustom ourselves to working—and thinking—in color.

Rapid Processing Methods

Continued from page 55

the two bath developer, SD-6 gave noticeably more shadow detail than the D-72.

The characteristics of this developer with Eastman Super-sensitive Panchromatic cut film (July 1935) are given in Tables I and II. It will be noticed that the two bath developer compares favorably with other developers for the lower degrees of contrast, but that it does not compare so well when development is forced in order to obtain high contrast or the highest possible emulsion speed.

Continued Next Month



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must be maintained between the dramatic or artistic demands of a scene and the cold, commercial commands of the production office.

If too much deviation and corresponding time is given for a set-up, that scene may turn out to be a screened success but a financial failure in that it cost more than it contributed to the picture in its entirety.

To the contrary, if a scene is slighted with eye only to production speed the results are not only disastrous to the completed work but to the professional standing of the Photographic Director.

It is this establishment of scene values

in conflicting terms of art and trade that calls not only for instant determination of far-reaching decisions but an ingrained drama sense and inherent intuition of theater evaluation.

Which brings to the surface once again the manifold demands made on the professional experience and equipment of the practicing cinematographer.

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to remove the empty guns and replace them with loaded ones. The guns snapped into their contact-plugs like 50 merry radio-tubes, and as soon as the new guns were in place, the scene could go on.

Sinking the "Arabella" was interesting, and gave us some highly effective shots. I still can't agree with the cutter who left my pet shot of the sinking out of the picture! We hammered the ship unmercifully with the "enemy's" artillery, blew her up, staged a very effective fire and finally let her slip beneath the waves. And it didn't take 3,600 pounds of dynamite and a \$60,000 ship, either!

In fact, if you come right down to the actual construction cost of the ships, comparing our miniatures (which, as one director who wanted one of them for his den learned, aren't so very miniature after all, being over 18 feet long with sixteen-foot masts!) with full-size ships, the saving effected is still more impressive. The most economical figure our budgeteers could give for constructing two real ships was \$120,000.00—disregarding all operating and photographing costs. Providing three ships as we did, would have cost \$180,000.00. Our three miniatures were built for a total of \$3,300. If you want to deal fondly with full-scale shipping, and take a two-ship fleet, the saving amounted to \$116,700, if you figure on a basis of three ships delivered; the saving is \$176,700. Or to put it differently: thanks to modern special-effects cinematography, we were able to deliver every shot that was too expensive or too dangerous to do with real ships and people (not to mention a lot of other process footage) for 1/70 the cost of merely building three full-size ships!

The savings in production-time were quite as impressive as the savings in money. The production itself had a nine weeks' schedule for making the dramatic

scenes. The special-process staff had three weeks' head start for their work, and completed their last shot on the same day the last dramatic shot for the production was made. I think "Captain Blood" set a precedent for the industry in one respect: due to the extreme expense of making the production by straightforward methods, the decision as to whether or not the film was to be made at all was contingent upon the work of the special-process staff. Some of the executives frankly doubted that the bottles, etc., could be successfully made as we planned.

The business of blowing up the row boats was filmed in half a day's work, as compared with four or five full working days which would have been required for full-scale methods. In making the miniatures of the battle sequence, standing sets around the tank precluded shooting our miniatures except between

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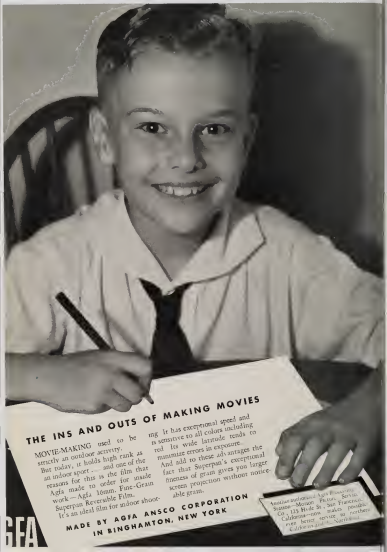
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t his issue

Musical Score for Pictures
Trend in 16mm Sound Projection
Using Light to Help Composition
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About Transitions
... and other features

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THE INS AND OUTS OF MAKING MOVIES

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AMATEUR MOVIE SECTION

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Next Month . . .

- The Winner of the Grand Prize in the American Cinematographer 1936 Amateur Movie Contest will tell you how he made his picture. He will give you a complete outline of his methods and procedure.
- There will be an article or two by A.S.C. members, professionals who use 8mm or 16mm cameras themselves. They know the limitations of the amateur camera, and will speak authoritatively.



PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.



Musical

FRED ELLS started it. His entry in the 1935 American Cinematographer Amateur Movie Contest arrived complete with an impressive musical score on phonograph records. Without that score, his film, "In the Beginning," was just a rather more than ordinary true documentary picture, with the music, it was an enthralling experience. In fairness to the other contestants, "In the Beginning" had to be judged as a silent picture, and it speaks well for Ells' cine-craftsmanship that even without the help of the music, his film placed as one of the most notable runners-up. Had the judges viewed it to the accompaniment of its superbly tailored musical accompaniment, it must surely have gained even higher honors.

A few days after New Year's, the Editor said to me, "Bill, we're showing the prize films to the Los Angeles Amateur Cine Club next week. I'm putting 'In the Beginning' on the program, too, of course. I'll show it with its music, so we really ought to have some music for the others. Your hobby is collecting phonograph records; if you think you could work out scores for the rest of 'em?"

That night I carried home four cans of assorted prize-winners, wondering what sort of music they'd need. And how I hoped I had the right records in my library!

The first step in the scoring job was to run each of the pictures, not once, but half-a-dozen times or more, until I was thoroughly familiar with all the changes of mood and tempo. The people who made the pictures each had a definite story to tell in film; my score had to tell that same story in music—and sight and sound had to be in step.

Of course, in ordering scores for a diversified group of films such as these, the logical thing was to begin on the films that were dramatically simple, and work up to the more intricate ones. Tatsuchi Okamoto's film, "Vanishing Autumn," which won the Photography Award, offered the greatest dramatic simplicity. Throughout, it kept to one dramatic mood—one of gentle melancholy. The tale it told was of an orphaned child and her aged grandfather, eking out a sorrowful existence in the mournful autumn. Music for this film should be subdued and simple, yet suffused with a poignant beauty, to match Okamoto's cinematography. So I began the accompaniment with the Pre-

lude to Act I of Verdi's "La Traviata," played by Arturo Toscanini and the Philharmonic Symphony Orchestra of New York, Victor record No. 6994. This was followed by "Cœur Brisé" (Gillet), played by Marek Weber and his orchestra, HMV (British Victor) record No. 8-3026. Next, I used the opposite side of the first record—the Prelude to Act I of "Traviata", Victor No. 6994. At the moment, near the end of the film, when the little girl runs from her grandfather to drop in prayer by a wayside shrine, I shifted to "Death of Ase," from Grieg's "Peer Gynt Suite," played by Eugene Goossens and the Royal Opera Orchestra, HMV record No. C-1298. This completed the score.

Paul Burnford's "Moods of Nature," which captured Documentary Class honors, offered a greater variety of moods. It began with a long sequence showing nature in a tranquil aspect, then came the wind, whistling a screaming warning of an oncoming storm, next came the storm itself, portrayed especially by the thunderous-voiced surf, lastly, Nature's calm was again restored, but with a distinct note of the everlasting permanency of Nature's expressions. To tell the first part of the story, I chose a selection from Katselbey's Suite, "In Fairy Realm"—"The Moonlit Glade," played by Albert W. Katselbey and His Concert Orchestra, Columbia (Brunswick) record No. 9409. As the wind sequence started, the music switched to Rimsky-Korsakoff's "Flight of the Bumblebee," the second of two selections on Victor record No. 6579, played by Frederick Stock and the Chicago Symphony Orchestra. For the storm itself, my library failed to produce an orchestral record of sufficient length, but yielded an organ selection of exactly the right type to sing of the thunderous waves. Biellmann's "Toccata" played on the organ of the Cathedral of St. Jean in Lyons, France, by Edouard Connetto, Columbia record No. 50125-D. For the concluding sequence, "Wedford-Dawes' "Solemn Melody for Orchestra and Organ," as played on Columbia record No. 7136-M by Sir Hamilton Harty and the Halle Orchestra, gave not only the exactly right mood, but a perfect musical transition from the preceding organ solo.

T. Lowmason's prize "home-movie," "Happy Day," struck on entirely different note. It tells of a delightful youngster, long faded a mature two years), and his playful day at the beach with his parents. The camera follows him from the time he huddles downstairers through his breakfast, Daddy's announcement that there'll be a picnic and the joyful preparations, through the thrills of wading in the ocean, building sand-castles, a picnic-lunch, a sedately exciting ride on a donkey, ice-cream, to the slow, sleep progress home arriving just in time to escape a shower, have dinner and a bath, and slowly climb upstairs to bed. In the main, this calls for light, happy music (not too jazzy), which provides merely a cheerful background, but does not intrude on the simple naturalness of the picture. Again Mr. Katselbey was laid under contribution: the score started with his "Wedgewood Blue," as played on Victor record No. 36090. From the time Daddy announces that the weather-men promises good weather for the picnic, impatience is the order of the day, so Katselbey's "The Clock and the Dances Figures," for which a ticking clock beats time, is

Scores for the Prize Pictures

by
William Stull, A.S.C.



used, this is played by Mr. Ketelbey and his Concert Orchestra on Columbia record No. 50834-D. As the party arrives at the beach, the songfully "Wedding of the Roses," played by Dajos Belo Artists Orchestra on Columbia record No. G-59072-F is used. This takes Ian through to lunch time, when we go back to the music that accompanied his breakfast, though in a slightly different version, "Wedge-wood Blue," played this time by the composer, Albert W. Ketelbey and his Concert Orchestra on Columbia record No. 50834-D (the reverse of the second disc). As Ian points away from his lunch to where he sees the donkeys, but one piece could fit "The King's Horses," played by Jack Hylton and his Orchestra on Victor record No. 22619. For the remainder of the picnic (we "cut" the previous disc half-played) we use Victor record No. 19758—"Nola"—which very conveniently slows its rhythm at exactly the right point to synchronize well with the homeward trip. As the rain starts to pitter-patter on the windowpane, the picture again tells us what music to use: Brunswick record No. 7487, "Isn't This a Lovely Day to Get Caught in the Rain?" by Fred Astaire and Johnny Green's Orchestra. As the music starts to modulate into the vocal chorus, change to "Glow Worms," Victor record No. 19758, which is on the other side of "Nola," and this will carry Ian off to bed. If you can find a record of "Little Men, You've Had a Busy Day," which doesn't start right off with a vocal chorus (I couldn't find one!), that would of course be even more fitting.

As this showing, another of the runners-up was exhibited, "Chronicle." And this picture is a problem in scoring! It runs what the old-school critics would call the gamut of emotions and moods. If it is to be scored at all, it must have a score that runs a similar gamut, and this calls for a variety of records, and quick changes. I had to use eleven records for the score—and not one was played through! The picture, entirely in close-ups of hands, tells the story of a boy from boyhood to the time when, on a "wild party" on his twenty-first birthday, he drives drunkenly into a loma-cost, killing his companion and sending him to trial and prison. For the opening titles, the first strains of Ferde Grofé's "Metropolis" (Part 1), played by Paul Whiteman's Concert Orchestra, furnishes an accompaniment. The first sequence is accompanied by Victor record No. 9904, record 3 from Album C-11, Victor Herbert's "Yesterdaythoughts." As the baby hand drops the teddy-bear, Serge Koussevitzky's string-bass solo, "Sonata Largo," Victor record No. 7159 is begun. As the youngster grows up, a shot of a grotesque toy duck cues a change to "The Toymaker's Shop," the opening number in "Selections from 'Babes in Toyland,'" Victor record No. 9148

(Record No. 8 from Album C-11). On the next birthday we are shown, the youngster has grown to be a good-sized boy, this sequence is accompanied by "Rose-beetle Goes A-Wooing" (Arenvinkla), played by Ferdy Kauffman and his Orchestra on H.M.V. record No. 8-3507. As this birthday-feast, the boy's hand slyly slides down from the table to give a morsel to his dog, obviously "The Whistler and His Dog" (Victor record No. 19869) is indicated. At the end of the dog sequence, we change records to get sufficient playing-time, conveying on with the other side of the same disc, "The Warbler's Serenade" by Arthur Pryor's Band. This comes on to the scene where he is shown drawing a poster for a boyish circus, the next scenes depict him roughly drawing in his Bible, and, later, as a Boy Scout, so we change to "Kungesång," Victor record No. V-20004, played by the Royal Swedish Navy Band. As the boy grows into a young man, "Fashonette," which Joe Rines and his orchestra play on Brunswick record No. 4199, is the theme. Then, as the last festive birthday-party begins with a close-up of a wine-bottle, Part 3 of "Metropolis," Victor record No. 35934, is begun just at the start of the wistful interlude. It is perfectly motivated for both the drunken sequence and the auto-crash. As the court clerk's gavel starts the slow-paced closing sequences of the film, the last record comes on, Gounod's "Mors et Vita—Judea," played by Lawrence Collingwood and the New Symphony Orchestra on H.M.V. record No. C-1969.

Ells' score for "In the Beginning" consists of the whole of Victor Album No. 182, which consists of liturgical music by the Sistine Choir of Rome. If is a beautiful and altogether fitting accompaniment to a remarkable film. Ells, I think, had the advantage of being in some measure able to tailor his film to fit the music, rather than having to fit the music to the film.

For the Grand Prize winner, "Red Cloud Lives Again," Dr. F. R. Lescher, who made the film, arranged his own score. His accompaniment shows the same touch of masterful simplicity which made the picture a winner. Dr. Lescher had a number of different themes to provide, yet

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Trend in 16mm Projection, With Special Reference to Sound

by
A. Shapiro*

THE PURPOSE of this paper is to review briefly the progress made in the development of 16mm projection, the effect upon it of the introduction of sound, and to determine what trends are discernible in this rapidly moving industry.

Oginating as a hobby for amateurs, 16mm films during the initial period of growth found their largest market in the home field. Despite remarkable developments that projected its utility into 35mm domains, in the minds of many who have not followed its progress closely, 16mm motion pictures are still thought of in terms of imitation rather than as successor to the larger films.

Some five years ago, in an effort to demonstrate the professional possibilities of 16mm pictures, the writer displayed a new projector at a convention of the Society held at Washington, D. C. It was pointed out then that the trend of design must give consideration to the professional rather than to the home field. As indication of this trend, a picture was projected with the machine that was displayed that almost filled a theatrical screen 14 feet in width, using only a 250-watt, 20-volt standard incandescent projection lamp, the projector being some 70 feet from the screen.

It is of particular interest to review the progress that has been made since that demonstration. Considering projection only, the most important improvement has been in illumination. Projection lamp design has made remarkable progress. Lamps of 1000-watt capacity are now available for 16mm use. Gatos and film-moving mechanisms are far more efficient than formerly. Without any substantial increase in size or weight of equipment, the illumination today has definitely reached the auditorium stage. Five years ago it was a novelty to project a theatrical-size picture in an auditorium having a capacity of 500 persons. Today it is commonplace, and numerous instances can be found where the 16mm projector, formerly referred to as the "little brother of the 35," is being operated in projection booths in place of the larger equipment.

With this advance in illumination, the field of usefulness of 16mm projection has rapidly increased. Industry, which had long realized the value of 35mm films for sales and business purposes, found the improved 16mm equipment much more convenient than the heavier and more cumbersome 35mm projectors. In education, where extensive libraries of teaching films had been developed as visual aids, the 16mm equipment was quickly accepted as the more desirable in view of its lack of life hazards, lighter weight, and ease of operation. In non-theatrical fields, such as churches, clubs, lodges, and social groups, the 16mm equipment has increasingly become the favored standard for auditorium projection.

With the advent of sound, it looked at first as though the 16mm industry had found a real stumbling block. It

seemed incredible that satisfactory sound could be photographed and reproduced on the 16mm film, which operated at two-fifths the speed of the 35mm. It seemed impossible that the complicated mechanism of sound projection could be added in a compact and light-weight portable form to 16mm equipment and at the same time achieve comparable sound effects.

A short period followed in which the industry was frankly perplexed. It tried to effect a compromise by using synchronized disk records on an attached turntable for the sound. This did not prove to be a happy solution, and it was soon realized that 16mm sound production would have to march in the footsteps of the 35mm with the sound on the film just as it did in projection.

Early work with 16mm sound-film had not been encouraging from the standpoint of sound quality. The limitations of film size and the slower linear speed for light-beam scanning resulted in substantial losses in 16mm sound reproduction as compared to 35mm. Radio had set a definite standard for sound quality, and it was generally conceded that 16mm sound would not be satisfactory until it reached, and preferably exceeded, the quality attainable with radio reproducers of the best grade.

Meanwhile the revolution that sound had created in the 35mm field had its reverberations in the 16mm field. Insistent demands arose from the industrial, educational and non-theatrical fields that 16mm equipment provide the advantages of sound as well as the picture. Even the home field became to some extent dissatisfied with home movies without sound, and home talks gave promise of large outlets for the industry.

Happily for 16mm movies, progress in sound recording advanced rapidly. With the advent of high-fidelity recording, with its greatly enlarged range of frequencies, in combination with great advances in optical reduction printing, the losses of 16mm sound-film became of lesser significance. Continued improvements finally made it possible to provide a quality of sound with 16mm film comparable to the best reproduction on high-class radio sets. A frequency range of 50 to 7000 cycles became possible, while output capacities of 15 watts or more, with negligible distortion, proved adequate for auditorium use.

Where is 16mm sound-film most extensively used at the present time? It is quite safe to say that industry is by far the largest user. Such representative large corporations as Chrysler Motors, Firestone Tire & Rubber Company, Portland Cement Company, Harnett Company, General Motors Corporation, and hundreds of others too numerous to mention, are utilizing 16mm sound for many purposes. It is being used as a sales medium to consumers, as a training medium for dealers and salesmen, and as an educational medium for employee instruction. The production

*Paper presented by Mr. A. Shapiro, of Ampex Corporation at Meeting of S. M. P. E.

Reprinted from January 1938 issue of Journal of the Society of Motion Picture Engineers.



Using Light To Help Composition

by

J. Belmar Hall,

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WE often hear some cinematographer say that painting with light is the most important thing in motion pictures. Well, that is true, he can take care of the close-up of the star with reflectors for all the effects he wishes to get, but when he is compelled to make the exterior scene in the studio he has to create the illusion of reality. Light is his medium, he must use it as the artist would his pigments, even if he is shooting in black and white he can get all the tones and subtle qualities that will have the psychological reaction to the audience mind that they are seeing an exterior. Atmosphere that is made up of light only, real trees placed in proper relation to the painted backing must blend into the whole thus the light the cameraman allows to come through his lens.

In the first photograph at the top you will see how well the artificial tones are made to seem real. The gradations from the foreground to the subtle tones in the background are in true value to the real exterior. Light coming from above where it actually does in nature, but is soft and mellow so that the eye can feel in harmony with the scene. The artificial light, that is, that which comes from the lamp-post and through the windows, must show a contrast to the natural lighting. The bits of props that are placed about

this scene give it realism, the watering pot perhaps is the most none, because some little thing like that makes one feel that people had actually been there working in the garden. The ladder at the side against the wall lends atmosphere. All pictures, day or night, are taken with the light coming from one angle, the reason is simple, natural light changes during the day, and as shots in the studio are taken at different times, the light source must be always the same to match with every scene. There must be no sudden jumps of light playing all over the scene. You could never sit through a picture if it was made this way.

Photos 2 and 3 are of the same scene, it is a little interior of an European inn, with careful study of light and design. The ceiling beams are shown with their ornamental design which is characteristic of such a place. The lighting is subtle and such as one would find in Europe. The arrangement of the chairs and tables are home-like. The little things placed on the wall sing their song. Now contrast it with the same scene cluttered up with garlands and streamers, tables looking like some American cafe, no unity in composition, lighting flat and meaningless, beams are lost in the jumble. It could be New Year's in any city, but it never is, nor never could be, European. There is no painting with light, just a sorry mess. No indication of where the light might be coming from. Avoid this at all times and you won't regret it.

The first picture at the bottom on the left is typical of the sets made in major studios. Refinement, balance and good design. The furniture is in keeping with the modernness of the architecture. Soft, mellow light through the large window is interesting and leads the eye to the stone arch entering on the rear of the room. The balcony stands out in relief against the archway with light coming from some other part of the mansion. The lighting fixture on the left side of the room is in keeping, the heavy drapes belong in this scene. People moving about this room even if it were today, would fit into such a place. The lighting is highly dramatic as the costumes worn in this picture were the accenting note. This is good composition.

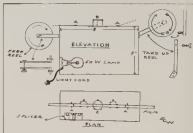
The next two pictures are in the "modern manner" French in fact. The lighting system used is real as far as

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Making An 8 mm Film Viewer

by
E. V. Soderberg



A SERVICEABLE film viewer can be made with a small cash outlay, and use of a few simple tools. Secure a wood box, approximately 4" wide, 8" long and 4" to 5" deep. The box used in the sketch was a card index file box with a hinged cover. If a box with a hinged cover is not readily available, use or make up a box, eliminating the bottom entirely as the interior need only be available to replace the lamp. The box should be planed and sanded to a very smooth finish and varnished.

Inside the box mount a standard porcelain socket, connect sufficient lamp cord to reach floor or wall outlet. A 50-watt Mazda lamp gives all the light required.

Make two brackets of heavy gauge metal (10 or 12 ga.) $3\frac{1}{2}$ " wide— $4\frac{1}{2}$ " long. Drill two $3/16$ " holes in one end, one $1/8$ " hole in the opposite end. Bend the ends (drilled $3/16$ ") at right angles $1/8$ " from the end. These brackets mounted with stove bolts on the box, as shown will accommodate the film to be viewed either 8mm 200-ft reel or 50-ft laboratory reel—a $1/4$ " bolt and a wing nut will complete this mounting. The brackets can be tightened against the reel to a desired tension with the wing nut.

*For the take-up reel a single bracket was made of $1/16$ " brass 6" long drilled same as other brackets. This bracket may be bent the same as the others, but we found it desirable to bend it on about a 15 degree angle, as illustrated. This places the take-up reel higher, and is easier to operate in this position. A $1/4$ "x $1\frac{1}{2}$ " bolt with nut to fix it permanently and a $1/4$ " wing nut and washer for tension control on the reel are required.

The take-up reel itself we use is just an 8mm laboratory reel with the handle of a discarded fishing reel soldered on to it. A regular 200-ft reel could be equipped in a like manner. For rewinding, after viewing and splicing, it is more practical to use the Kodascope.

The top assembly, where the actual viewing is done, is laid out as follows: After the brackets are mounted and squared in a direct line to each reel, draw parallel lines, the width of the film, between the feed and take-up reels.

(a) From thin brass or sheet metal cut the two guides for the film $1/4$ " wide—1" long. Bend them in the shape as illustrated in the sketch. Allow about $1/8$ " in height in the forming of these guides.

The author has made an explanation of the guide slot shown but to further simplify it and make it more understandable he has given as the above sketch showing detailed construction of the viewer. A comprehensive reading of the article and comprehension of the above outline drawing should make it possible for anyone desiring to do so, to make this gadget without much trouble.

(b) They are fastened with wire brads to the top over the film path 2" from each end of the box, and covered with adhesive tape to protect the film from the sharp edges. Wire brads should be driven part way in, along each side of the film path, to guide the film accurately.

(c) Then in the center of the box and in the film path cut a slot approximately $1\frac{1}{2}$ " long and the width of the film. On the underside of the slot paste a strip of paper mending tissue to diffuse the light. For the viewer magnifier I used a double lens mounted on three legs, as ordinarily used in biology classes at school, about a four power glass. A Triod Magnifier, Eastman Kodak No. 31-63-01, may be used, and can be secured from any Kodak dealer for 75 cents.

Three shallow holes were drilled in the top of the box, as indicated in the sketch, for mounting this glass.

Next thread a strip of test film through the guides (all or amu/an side up, so perforations will be on the right side). With the glass in place, make a mask of black paper for the light slot to cover three frames in length and masking off the perforations.

The viewer is then ready to connect to a light circuit. The distance of the eye from the eye piece is, of course, a variable factor, but 6" to 8" is best for the glass I use.

If the box is large enough, it will be convenient to mount the film splicer on one side. Film can be nicked with a pocket knife as it is viewed for proper splicing.

This viewer is, of course, designed for 8mm, but with necessary changes in measurements, could be adapted to 16mm.

The glass and mounting of it could be changed to suit what the constructor has available, but at least a four power magnifier needs to be used to obtain good results.

A. S. C. Extends Honorable Mention To Amateurs

LAST MONTH in addition to listing the 1935 Amateur Movie winners we also gave a list of the runners-up. It is only natural that these runners-up are highly deserving of honorable mention.

With only four classifications represented in last year's prize winners and with Documentary Class carrying the greatest number of entries, it is only natural that there should have been a great number of exceptionally fine entries in that class, many of which in a less representative and less important contest or classification would have been termed prize winners.

The Documentary Class took within its confines all pictures not built around stories or scenarios. This means that the scenic, travel, educational, industrial and others which were records of events or things were classed as documentary.

The entries coming from Japan would indicate that that country has gone 8mm. Not only was Okamoto's prize winner an 8mm, but a dozen or more from Nippon were shot in that size. However, outstanding for its novelty and idea was Tameyuki Sakamoto's offering of "Unknown Thing From Unknown Land." This was a story by animated drawings. It was of the fairy tale type, but well executed, well handled and convincingly portrayed. Sakamoto deserves special commendation for his patience and for the splendid completion of a very difficult task.

Honorable mention was also extended to J. Sherlock of Sydney, Australia, for his "Surf, Sand and Sunshine," a scenario picture of a day on the surf with a shark scare and a love theme welded into an interesting pictorial portrayal.

"Fishers of the Grande Anse" by Leslie P. Thatcher of Toronto, Canada, was a grand picture. While it might have been placed in the runners-up class, still the judges felt that only those should be placed in that class that held on until the very last ditch. "Fishers of the Grand Anse" missed by one hurdle. Honorable mention.

"Conscience," by Claude W. A. Codarotta of Los Angeles, received honorable mention for his 8mm scenario picture. This picture was a prize winner in the Los Angeles 8mm Club's annual contest.

"Creatures of the Past" was highly enjoyed. It is the work of C. E. Welsh and C. B. O'Donovan of Pittsburgh. They took as their models a display made by local and New York department stores. The manner in which they photographed led the viewer back centuries to the time when the prehistoric mammoth was on this earth. Honorable mention was accorded these cinematographers for their work.

H. Okia of Japan was given honorable mention for his 8mm picture, "The Thrill of the Silver Crest Range," as was Y. Kaneko of the same country for his production, "Symphony Natural." Another honorable mention going to Japan was given to Tameyuki Sakamoto for his picture, "Country Life in Early Summer."

Six from Los Angeles received honorable mention. Franklin B. Skeels for his picture, "Hook, Line and Slickers." A record of a summer trip with humorous twists. Floyd Stone for a Kodachrome subject, "Once Upon a Time." Scen-

ario and subject matter were fine, but the photography rather under and dark. F. B. Judson for his Kodachrome picture, "The Story of Linetta." This was made in 2000-ft for commercial purposes. H. A. Linek for his picture, "San Diego Exposition." This picture was given first prize in the Los Angeles Cinema Club annual contest. Van Dee Sickler for his picture, "Spunky." This was a sequel to his last year's prize winner, "Wischief." It has the same characters, the dog, cat and bird with an addition to the dog and cat family. Alfred H. Orme for his picture, "The Real Answer." Orme gave his picture a great deal of interest by the titling.

J. R. Denzawa received honorable mention for his 2000-ft picture "Nase Parade." As a general rule it is difficult to maintain interest through five reels of pictures.

Delmar J. Prosser of Oakland, California, had a very fine picture in his 500-ft subject, "The Incorporation of Marie Colet." It was well acted, well written and nicely handled. It was very deserving of the honorable mention which it receives. We might say he receives two honorable mentions. The other for his home movie subject, "Black Magic." This was a well thought out picture, but lacked a bit in photography to stack up with the prize winners. An ambitious effort was the entry of the Greater Oakland Motion Picture Club. Excepting for its finish, it was right up in the prize winning class. It receives honorable mention.

A. Scott Moorhouse of Toronto, Ontario, entered a combination black and white and Kodachrome subject in "Village by the Sea." This picture went very far in the finals and is highly deserving of the honorable mention it receives.

Bill Turnbull of Denver entered several 8mm subjects of the Chicago Fair. To our mind they were among the very best pictures of that event that had been submitted to us in the past two years. His pictures were well cut, nicely edited and deserving of honorable mention.

Joseph F. Hollywood of New York City entered "Opera Night," shot entirely indoors with some trick stop action built around his children. A deserving effort that receives honorable mention.

Helen and William Pryor of Falls Church, Va., entered an imaginative subject in their picture, "Anyo," which receives honorable mention.

Mrs. Anne Filut of Mahwah, possibly entered the most ambitious undertaking to be viewed by the judges. Eleven reels of 8mm film on "Creative Work in Fractions," in which she clearly shows the principles of her subject and the fundamentals of the work she is teaching, taken in the classroom with the children themselves as the actors. She was given honorable mention.

Karvanthin J. Kashch of Long Island City receives honorable mention for his picture "Bermuda, the Floating Gardens." Cinema Players of Chicago also received honorable mention for their 370-ft picture, "Ten Easy Lessons."

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Continuity For a Family "Thriller"

by
Barry Staley

HERE'S a little story built for a girl. It can be altered in some of its minor details to fit your conditions and facilities. Your imagination or observation of your child may dictate some changes and additions. But here's the story as we see it.

MAIN TITLE: THE GREAT KIDNAP MYSTERY—or, THE ANEMIC BLOODHOUND

Scene 1: LONG SHOT of small daughter Ruth in backyard playing with doll. Rover, her dog, is in the scene.

Scene 2: CLOSE-UP of Ruth playing with her doll. She looks up toward the house.

Scene 3: MEDIUM SHOT of mother at back door of house calling and beckoning Ruth to come in.

Scene 4: CLOSE-UP of Ruth nodding that she has heard and carefully placing doll in chair.

Scene 5: MEDIUM-SHOT of Ruth leaving her doll and running to house.

Scene 6: MEDIUM-SHOT of mother still at back door. Ruth runs in to her. They enter the house.

Scene 7: CLOSE-UP from high camera angle of wash basin in bathroom. Ruth's hands come in, turn on tap, take soap.

Scene 8: CLOSE-UP from same high camera angle of Ruth's soap-sudsy hands rubbing together.

Scene 9: CLOSE-UP of folded towel on rack. Ruth's hands come in and wipe themselves dry. The little hands, pink and spotless, one held out for inspection.

Scene 10: MEDIUM CLOSE SHOT of luncheon table in diningroom, set for Ruth's lunch. Ruth comes in, takes her chair, begins to eat happily, she looks up and points to the window.

Scene 11: CLOSE-UP of window pane from inside. Rain is falling on it.

Scene 12: MEDIUM CLOSE SHOT of Ruth's doll in its chair. Rain is falling on the doll. Rover enters, takes doll in his mouth and eats.

Scene 13: MEDIUM SHOT of Rover carrying doll into his dog house.

Scene 14: CLOSE-UP of Rover placing doll down in nice dry plate in his dog house.

Scene 15: CLOSE-UP of Rover looking out door of his dog house at rain falling outside. FADE OUT.

Scene 16: FADE IN on MEDIUM CLOSE SHOT of Ruth finishing her lunch. (Continuation of Scene 10.) She looks up at the window.

Scene 17: CLOSE-UP of window. The rain has stopped, the sun is coming out.

Scene 18: MEDIUM SHOT of Ruth leaving the table and skipping out from the diningroom.

Scene 19: MEDIUM SHOT of Ruth scampering merrily out the back door.

Scene 20: MEDIUM CLOSE SHOT of the vacant doll chair. Ruth runs in and notices the absence of her doll.

Scene 21: CLOSE-UP of Ruth looking about for her missing doll. She sees Rover and calls him.

Scene 22: MEDIUM CLOSE SHOT of Ruth as Rover comes running to her. Ruth leans down and talks to Rover. TITLE: "Only musta been kidnapped. Let's go find her."

Scene 23: CLOSE SHOT of Ruth holding Rover's nose to the doll chair so he can pick up the scent.

Scene 24: MEDIUM CLOSE SHOT of Ruth attaching leash to Rover's collar. She motions Rover to lead the way to missing doll. Rover starts away with Ruth, leash in hand, following.

Scene 25: MEDIUM SHOT of Rover leading Ruth across the yard. He is hot on the trail.

Scene 26: MEDIUM CLOSE SHOT of trash can heaped with old tin cans and such. Rover leads Ruth to trash can, leaps up barking. Ruth tosses out the cans in search of her doll.

Scene 27: MEDIUM SHOT of Rover leading Ruth away from trash can. Old tin cans, boxes and refuse are strewn about the ground where Ruth tossed them. Her hands, face and dress have become soiled.

Scene 28: MEDIUM SHOT of Rover straining at leash leading Ruth out the backyard gate.

Scene 29: MEDIUM SHOT of Rover leading Ruth along sidewalk. Rover suddenly jerks forward barking furiously. Ruth holds tightly to the leash.

Scene 30: CLOSE-UP of cat in a tree.

Scene 31: MEDIUM CLOSE SHOT from low camera angle. Rover is jumping up at the tree, barking wildly.

Scene 32: CLOSE-UP of the cat in the tree, springing and hissing.

Scene 33: MEDIUM SHOT of Ruth pulling Rover away from the tree and bidding him resume his trailing.

Scene 34: LONG SHOT of Rover, nose to ground, leading Ruth across an open field.

Scene 35: MEDIUM SHOT showing the remains of a bonfire in the open field. Rover leads Ruth to it, sniffs and starts digging with his front paws.

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Simple wipes are easily understood, but the one at the left is confusing.



Fancy transitions like this are tricky, and should be used sparingly.

How About Your Transitions?

by
Walter Blanchard

THE other day I was telling my friend Gus about some of the excellent transitions I saw in the prize-winning contest pictures. "That's all very interesting," he replied, "but why preach about it to me? I just shoot home-movies for fun—my pictures haven't anything to do with transitions."

That's where Augustus was wrong. Like many another movie-maker, he has transitions in every roll of film he shoots, whether he knows it or not. Every time you change from one thought or location in your picture to another, the change must be made by some sort of a transition. A direct cut from one shot to the next is just as much a transition as the most elaborate dissolve or "wipe." Good transitions lend smoothness to any kind of a picture, some of the best ones in the contest were in "Happy Days," the Home Movie Class winner, which told of a little boy's picnic afternoon at the beach.

The smallest transition is the direct cut. It is also the most abrupt. Where the change of thought or place is not too great, or when you are keeping a fast tempo, direct cuts from one sequence to the other can be used safely. But as a general rule, direct cuts should be avoided as transitions because they are so abrupt that the audience has no time to make the mental readjustment necessary in changing from one idea to another.

The fade-out and fade-in are smooth and positive. When you see a picture fade out on a sequence, you know without thinking that that is the end of the sequence. Fading in on the next sequence completes the smooth change from one line of thought to another.

The lap-dissolve, speaking technically, is just a combination of the fade-out and fade-in idea. It is beautifully smooth—and that's the weakness of the dissolve: it's so

smooth that you can't use it to connect sequences that aren't closely and clearly related. The lap-dissolve inherently suggests that the two ideas are closely related, dissolving from one idea or place to another not closely allied to it is almost as abrupt as a direct cut—and sometimes even more confusing, because the audience is less conscious of the dissolve.

The "wipe" is a tricky sort of transition. There are so many different kinds of wiping transitions possible that no general rules can be laid down. The simplest wipe, in which a dark area wipes the first scene from the screen, and is in turn wiped away as the second scene appears, is almost as deliberate and final as a fade-out followed by a fade-in. On the other hand, wipes in which one scene pushes the other off the screen are almost as abrupt as a cut. In addition, the wipe is rather of a trick-shot, and most of them call attention to themselves rather loudly. The best transitions are those which quietly bridge the gap between one sequence and the next, without diverting the audience's attention from what you are telling to how you are saying it.

Tempo plays a very definite part in using transitions. A quick fade-out and fade-in not only sets a faster tempo than a slower transition of the same type, but also suggests a more intimate relationship of the ideas in the two sequences. A long fade out and fade in transition sets a more deliberate tempo, and suggests that the two sequences are farther separated in thought, place, or time. The fade out and fade in combination, incidentally, is the surest way of bridging changes in tempo between two sequences.

The length of a lap-dissolve also has an important bearing on tempo. A short fast lap gives a fast tempo, but it is often so quick as to be confusing. A more deliberate blend is better for most normal purposes. At the other extreme, ultra-long dissolves slow the tempo, but again at the price of confusing the audience. In "Dishonored," Josef von Sternberg, A.S.C., used lap-dissolves as much as 200 feet in length. They gave him the slow transition he wanted all right, but they were so damned gradual that most audiences left the theatre wondering what it was all about!

Wipes can be made in any tempo, depending on the nature of the wipe used. They can be slow and deliberate, or they can be speeded up until the transition is almost as quick and abrupt as a direct cut. They lend themselves well to rhythmic presentation, especially if the picture is synchronized to music.

But the photographic side of transitions isn't by any means the only thing to be considered. Not only is how you make your transition important, but from what and to what you change. The shots leading up to a transition, and from it into the new sequence, are equally important. They are what decide whether your film is to be a clever, smoothly-flowing picture, or just another amateur movie.

In "Chronicle," there were several good transitions. At one point, for instance, it was desired to show that while the boy's mother was carefully keeping his birthday cake for him, he was out getting drunk at a wild party. This transition was made by showing a series of close-ups of the mother's hands smoothing his empty bed, setting his alarm clock, and finally cutting a nook on the uneaten birthday cake. From this shot, a short lap-dissolve changed the scene to a close-up of a napkin being removed from a wine bottle. Then, going from this by direct cuts, the party sequence continued.

Some of the best transitions in the contest, though, were in "Happy Day." The picture begins with the family's breakfast. Then the father announces that, as the weather

Continued on page 83



WHEELS OF INDUSTRY

Eastman Pola-Screen

• The troubles which photographers have in shooting scenes in which oblique glare from some polished surface obliterates details or in which appears the reflection of objects not intended to be in the picture, have been solved by a new photographic device announced by the Eastman Kodak Company. It is called a Pola-screen and looks like an ordinary lens filter but has properties that seem truly magical in their operation.

Look through a Pola-screen at a plate glass window showing the oblique reflection of the other side of the street, rotate the mount and the reflection disappears. You may then see clearly through the window. Or, as another example, if the glare from an oil painting is so intense that you can scarcely see what it is, look at it through a Pola-screen, the glare vanishes and the subject is revealed. Similarly with the design in a tile or linoleum floor.

This device is a practical application of the fact that light rays normally vibrate in all directions at right angles to the ray itself but under some conditions become "polarized," meaning that all directions of vibration but one have been stopped. This occurs in oblique reflection, and in the light coming from a clear blue sky.

The Pola-screen is made of a transparent sheet polarizing material in which is dispersed a countless number of minute, parallel, rod-like crystals that act as optical slits and which is oriented between glass plates in a holder to put over the camera lens. When the screen is rotated, the direction of vibration of the transmitted light is rotated and at a certain position the polarized light is absorbed and thus cut out of the picture.

Tests of this device by Hollywood motion picture photographers have shown that Pola-screen shots of water can be made which subdue glare and reflection from the surface, showing rocks, fish, divers or other objects under the water through a considerable depth. Undesired reflections from highly polished sides of automobiles and other glossy surfaces which give the photog-

rapher trouble are similarly subdued, and without affecting the rest of the picture. The use of the Pola-screen when photographing subjects against a blue sky gives remarkable effects in darkening the sky and permits considerable control of the relative brightness of walls and roof in architectural pictures.

The Pola-screen is equally useful in still or motion picture photography.

16mm Sound Releases

• "Three Centuries of Massachusetts" has just been released as a 16mm sound-on-film motion picture by the Bell & Howell Filmsound Rental Library.

Prepared under the direction of Professor Albert Bushnell Hart of Harvard its eight reels depict events, personalities and incidents which, because they figured in the history of Massachusetts, are chapters from the history of the Nation.

Professor Hart himself furnishes an interesting running narrative for the picture, telling the story of three hundred years of history, from the Pilgrims' first glimpse of the sand dunes of Cape Cod to the denaturation of the present-day skyline for New York.

The picture is made up of eight separate episodes, one reel being devoted to each episode, with a separate subtitle as follows: Reel 1, General Introduction; Reel 2, Colonial Life; Reel 3, Salem Witches and Shipbuilding; Reel 4, The Revolution; Reel 5, The Rise of the Sea Trade; Reel 6, The Rise of Arts, Education and Industry; Reel 7, The Rise of Steam Power and the Civil War; Reel 8, Modern Massachusetts.

Cartoon Censorship

• Alleging violation of copyright, Exclusive Movie Studios, Inc., 732 S. Wabash Ave., Chicago, and Paramount Productions Inc., from whom they hold a contract as exclusive distributors of animated cartoons featuring "Popeye," "Betty Boop" and others, have entered a Bill of Complaint against the Leader Motion Picture Film Company of New York City.

Among the films mentioned in the bill are "Popeye the Sailor," "Betty Boop's Birthday Party," and others which have been presented and directed

by Dave and Max Fleischer. All have been copyrighted by Paramount Productions Inc., with Exclusive Movie Studios, Inc., having rights to manufacture and distribute them through wholesalers and retailers in the 16mm size for home movie projectors.

According to Exclusive Movie Studios, Benjamin Leder and Nathan Leder of the Leader Motion Picture Film Company, New York, wrongfully obtained a quantity of the copyrighted film, and have manufactured and distributed the infringing films.

The bill asks specifically that the defendants be subpoenaed to answer the complaint and be perpetually restrained from duplicating, duping, or distributing films containing any of the details, images or symbols used in the copyrighted works.

New 8mm Lens

• Bell & Howell Company announces as available for both the Straight and Double 8mm Cameras a new 1-inch F2.7 Taylor-Hobson Cooke lens in either universal or focusing mount, also Taylor-Hobson fast 1-inch F1.5 lens in focusing mount.

Announced at this time, too, is a new Taylor-Hobson Cooke "semi-telephoto" lens, the 1 1/2-inch F3.5. This completes the range of lens focal lengths provided for by the viewfinder masks on Filmo 8mm Cameras. If longer lenses are desired, such as 2-inch, 3-inch, and 4-inch, Taylor-Hobson 16mm camera lenses of these focal lengths may be mounted suitably for use on the 8mm cameras.

The 12 1/2mm F2.5 lens will continue as standard equipment on the Filmo 8's.

16mm French Releases

• "Crime and Punishment," imported from France, has been released today on 16mm soundfilm by the Gorman Film Distributors Inc. The 16mm copies will carry over 600 English super-imposed titles.

The release on 16mm sound-on-film follows the selection by the National Board of Review of "Crime and Punishment" as one of the ten best European films of 1935.

Continued on page 83

EASTMAN PRESENTS

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DA-LITE SCREEN CO., INC.

2723 No. Crawford Ave.

Chicago, Illinois

Musical Scores for Prize Pictures

Continued from page 69

he did so without bringing about a bit of unnecessary complication in his score. He used but three records—and they provide as perfect-fitting a score as though he had used thirty! The introductory sequence is scored with "Deer Dance," Victor No. 22174. As the pioneers' wagon-train appears, the music swings to "Oh Susanna Medley," Brunswick No. 4569, changing to "Butterfly Dance," an Omaha Indian dance-theme, on the back of the first record, for the Indians' war dance. As the pioneers camp, "Oh Susanna" is repeated. Then, as the Indians attack, Wagner's "Ride of the Valkyries," Victor record No. 1963, provides the theme for the battle which finally wipes out the wagon train, and a repetition of the "Butterfly Dance" accompanies the epilogue sequence.

Properly to present such musical accompaniments requires a double-turntable reproducer, which need not be synchronized with the projector. It is easy enough to start your first record at the same time the projector starts, from then on, it is just a matter of knowing your cues for record changes, and following them. (For safety, have your cue-sheet written clearly!) The records should be arranged in order, and placed so you can get them quickly. The used records should be stacked on another part of the table, if there's room, or stood edgewise in a box or case, if space is cramped. If your records are good, don't try to play more than one disc with a single needle, for the first few turns in a record contain an abrasive that shapes the needle to the groove of that particular record. If, however, you are going to play two sides of the same disc on the same turntable, you needn't change the needle, for in most cases, both sides are cut with the same tool, and the needle, once fitted, would fit both grooves.

If it is or all possible, place yourself where you can hear the sound from the speaker fairly well, otherwise, judging as to the proper "fade" (volume-control) setting, you are likely to give your audience too much or too little sound, as different records are recorded to different volume-levels. Often you can heighten the effect by raising or lowering the volume for different scenes. For narrative titles, such as those in "In the Beginning," it is often good to use slightly more volume than when pictures are on the screen.

A dual turntable outfit would undoubtedly help when creating the score, but in my own case, I found that a very ordinary projector and phonograph were quite adequate. I would start the two together, and play the first record. Then I'd stop the projector while I changed records, starting disc and film together again. This is accurate enough



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for most purposes, though you must make allowance for the fact that it isn't perfectly accurate, and that with a dual turntable outfit, your record changes can be almost instantaneous. When you are playing only parts of a record it helps a lot to have a calibrated arm on the pickup-support, so that you know

it will be starting at the right point each time. Above all, don't overlook the importance of thorough rehearsal, and a good understanding with your projectionist for he can run your score by running the machine faster or slower than you did when you built the accompaniment!

Trend in 16mm Projection, with Special Reference to Sound

Continued from page 70

if these industrial 16mm sound pictures has become a large industry in itself, and a constantly increasing supply of film for such purposes is being made.

The educational field, which had already recognized the silent picture as one of the most valuable aids to visual education, recognizes in the sound picture a still more effective aid. However, the library of educational sound-films is still relatively small. The educational field is only awaiting the increasing of this library to take on 16mm sound in an extensive way. Even with the present small library, hundreds of schools are already equipped with 16mm sound projectors in the expectation that sound libraries will quickly and greatly increase.

The addition of sound to 16mm film has given the church, the club, and other non-theatrical fields a great stimulus. Circulating libraries of 16mm sound-film are now operating in a number of large cities, and rental rates are but slightly higher than for silent films. About 1000 subjects of entertainment character are now available, and this number will undoubtedly increase rapidly. This will, in turn, greatly increase the demand for equipment.

The home take-up field likewise is dependent to a considerable extent upon the further development of suitable libraries of rental sound-film. The introduction of a 16mm sound camera for amateurs has stimulated a corresponding demand for sound projectors. The higher cost of such equipment, however, has prevented its more general use. With lower costs, based upon designs particularly adapted for home use, this field will no doubt broaden considerably.

We come, now, to a consideration of what lies ahead for 16mm sound. We have seen how it quickly outgrew its original limitations, and with its increased light power, advanced into 35mm territory for industrial, educational, and non-theatrical purposes. In these fields, it unquestionably has tremendous unexploited possibilities, but, can it not go further?

What about the theatrical field? Has 16mm projection a destiny in the thou-

sands of moderate-sized theaters? The answers to these questions seem to depend upon two factors: one, the ability of 16mm equipment designers to improve their products further, the other, the attitude of film producers toward furnishing their releases on 16mm sound-film, so as to enlarge the available entertainment film library.

The rapid progress made to date in 16mm equipment design and illumination gives every promise that the first factor will be attained. Already hundreds of performances are daily being given on 16mm equipment to groups up to 1000 persons, showing pictures upon large screens. In most cases, the audience is hardly aware that the equipment used is not 35mm. The lamp manufacturers have for some time given serious consideration to improving the illumination further, and experimenting with such lamps will undoubtedly result in a tremendous gain in 16mm illumination. Likewise, sound improvement has already enabled 16mm equipment to fill the requirements of moderate-sized theaters.

With regard to the second factor, the producers have so far been apathetic to releasing prints on 16mm sound-film. This has not only retarded the 16mm growth in the theatrical field, but has hampered the growth in the non-theatrical and other fields requiring entertainment film. Whatever the reasons for this attitude may be, it is certainly not justified upon the basis of a comparison of operating factors between 35 and 16mm films.

For example, compare the factor of safety between the two films. While 35mm film of a non-inflammable type can be obtained by far the greater amount used is extremely inflammable. Many cities recognize the fire hazard this provokes, and require fire-proofed booths for 35mm projection. All 16mm film is non-inflammable or slow burning. Its safety has been recognized, so that no restrictions prevent its use, even in the open. As an instance of this great advantage it is cited that in many schools children operate the 16mm equipment. This can hardly be said of

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Light and Composition

Continued from page 71

the concealed fixtures are concealed. The overhead lighting would certainly help any actor walking through the doorway. The highly polished floor adds a note of its own. This is a feature in its proper relation and with the metal furniture they too belong. The last photo is a very fine textural composition, the wall of the pent-house opening onto the roof a very definite in character. The sculptured panel fits into the design perfectly, the polished floor of the roof is odd but lends dignity and richness to the whole atmosphere of the scene. The arrangement of the trees in the background balance with the composition. The rail in the night-hand background breaks the mis-siveness of the retaining wall running around the roof. The furniture is well placed for cinema action, not too much of it, but what is there, is good.

The amateur would do well to study the pictures of stills from Hollywood and see that in most cases they are very well thought out in composition and textural qualities. The lighting is dramatic and well chosen and detail is all important to the type of picture. When you are making your home movie don't try to light up your interiors like the proverbial Xmas tree, it is not the amount of light that makes a good picture, but the care as to how it is handled. Move your light about until you have found the best place for your dramatic action and then shoot. From time to time you will see light plots diagramed, they are for particular cases, so don't hold fast to the rule that there is only one way to get good lighting. Experiment and you will soon find that many new lighting plots will come up. Chart each one after you have made the shot, you may need this some time, and all plots should be filed away. Write in your problems and I will be glad to assist you.

A.S.C. Extends Honorable Mention to Amateurs

Continued from page 72

Honorable mention was also accorded the following:

B. Fredric de Vries of Rochester, N. Y., for his picture "Hunting With a Camera Instead of a Gun." This picture was made originally in its entirety in the zoo. Edw. A. Ballinger of Buffalo for "Land of Ultima Thule." George R. Menacker of San Antonio, Texas, for "Bullfight." J. E. Walter of Lafayette, Ind., for "Industrial Applications." Duncan MacD. Little of New York City for "The Making of Canadian Homespun." Frank E. Gunnell of West Brighton, N. Y., for "Admirable Adventure." Robert M. Coles for his "Y West Side," and

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"Rocky Mountain Adventures." Calas has a fine sense of composition. J. Oliver Tucker of San Francisco for "Yucatan," Howard Demarest for "Staff of Life," and Mark A. Bergotta for "Ghost Town."

"Ghost Town" was highly appreciated by those directors and cameramen sitting on the judging board who had once worked in New Jersey. This picture shows all of the deserted movie studios in New Jersey.

How About Your Transitions?

Continued from page 15

is fair, they'll spend the day on the beach. Of course, the household work must be done first—the dishes washed, and so on, before the picnic starts. After several shots showing these chores being done, Mr. Lawrenson used a close-up of the washed and dried cups being put away. This was shot from above. A short dissolve then brought us to a close-up (made from almost the same angle) of the baby's tin sand-pail—and we knew the family was ready to leave.

But logically, a good deal of time must elapse between the time the family leaves the house and the time they arrive at the beach. There is nothing to be gained by showing them on their way—in fact, you never know whether they went to the beach by car, train, or afloat and it doesn't matter in the least. With the camera set up in the hallway, the family is shown to leave the house. Finally the front door closes, and blats out the whole screen. The screen is dark for a moment, then a crescent of light appears at the top, and grows larger and you see that little "Ian," in his dark bathing-suit has been standing close in front of the camera and is now walking forward with his daddy, to wade in the ocean.

With the lunch finished, a donkey-ride still intrigues the youngster, and we have a cute sequence showing him riding the burro. This is one of those transitions where direct cuts can be used between two sequences. The picnic lunch is one definite idea, the donkey-ride another, but they are closely related in time, place and mood. So we have a medium shot of the baby finishing his dinner. He looks up, and points to something out of the picture. A direct cut changes the scene to a long-shot of the donkey-ride. The next shot—a closer one—shows Ian and his Mummy approaching the donkeys ready for a ride. The transition is quick, but not abrupt.

Eventually the picnickers start home-ward. After a long happy day at the beach, a two-year-old just naturally is growing tired and it's a long way home. So Mr. Lawrenson showed us the business of picking up the sand-pail, shovel, and lunchbox, and the start home. Then he dissolves into a close shot of the feet of the three walking along the pavement, the baby feet are dragging. Another dissolve, and we see them dragging still more, until Daddy turns about, walks back and picks them up. Another

dissolve and we see them entering the house.

Soon after the picnickers get home, a shower falls. We see the baby watching the rain through the window. It comes down harder and harder. Finally we have a close-up of the water gushing from a drain-pout, from which we log-dissolve to a close-up of a bathtub faucet running for the little boy's bath. After the bath, a dissolve from a close-up of the snarl sent as the tub empties to a vertical close-up of milk being poured into a cup, and we know that "Ian" is having dinner.

These are only a few of the clever transitions Mr. Lawrenson has used in his picture. By all means—and especially if you have felt, as Gus did, that transitions had no part in home-movie making—see "Happy Day" when your club shows the 1935 Prize Pictures!

Wheels of Industry

Continued from page 15

See See Neck-Pod

● A new and convenient photographic accessory, distributed by Burleigh Brooks of New York, the See See Neck-Pod is announced. The tripod extends to three sections reaching a length of 12 inches (Closed 5½").

The attached leather strap which is hung around the neck is adjustable, enabling one to bring the camera up to eye-level. The lower end of the tripod is pushed firmly against the body. This secures the camera. The tripod head or platform is detachable so that it can be mounted on the top or side of the tripod, thus allowing one to hold the camera both vertically and horizontally.

John Boyle, A.S.C. Touring Europe

John Boyle, A.S.C., who last year contracted with the Associated Talking Pictures Ltd. of London, as director of cinematography, left London night after the first of the year for a jaunt through Europe and Northern Africa.

Boyle flew via the Imperial Airways for Cairo via Paris, Rome and other points. On his return and he will fly via Athens, Budapest, Austria, Switzerland and Germany.

Boyle became homesick for the California sunshine—at least that is his excuse for his trip into the warmer climate and he is sticking to his story. A cablegram from him tells us he has reached the sunny south.

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Continuity for a Family "Thriller"

Continued from page 74

Scene 36 CLOSE-UP of Rover digging. The dirt is flying readily.

Scene 37 MEDIUM CLOSE SHOT of Rover and Ruth. Ruth has caught much of the flying dirt. Rover paws uneasily on old dirty bone. Ruth yanks at the leash and orders him back to the road.

Scene 38 MEDIUM SHOT of Ruth now quite dirty and very much disgusted (ailing the objecting Rover along a sidewalk).

Scene 39 MEDIUM SHOT of Ruth returning to her back door, still pulling Rover, and meeting her mother with this report—

TITLE "Mumsey, Rover's no good as a bloodhound—or else he's awfully overent." Fade Out.

Scene 40 FADE IN on Mother taking pot of food to Rover in his doghouse. It is evening.

Scene 41 CLOSE-UP of Rover sound asleep, Ruth's doll securely wrapped in his protecting paws.

Scene 42 MEDIUM SHOT of Mother putting down can and then taking Rover and the doll in her arms and leaving for house.

Scene 43 MEDIUM CLOSE SHOT of Ruth in her bed for the night. Mother enters with the doll and Rover, hands doll to Ruth.

TITLE "Rover took doll in out of the rain—he's bringing it back to you."

Scene 44 MEDIUM CLOSE SHOT of Ruth hugging her doll, and waving Rover away. Mother turns down the night lamp.

Scene 45 CLOSE-UP "In dreamt light, Ruth is sound asleep the doll firmly clasped against her face on the white pillow.

The performance of your dog rests on how well trained he is. But any dog can be led through this simple action by the judicious use outside camera lines at an inviting portion of hamburger or other dog delicacy. If a trail is laid by drawing the meat along the ground, the most mongrel pup will follow it expectantly. For the interior shot of the dog-house, made a simple "set," an old blanket folded and laid in a shallow wooden box. When your dog is sleeping, place the doll in his paws close to him for Scene 41. A garden hose will always provide the effect of rain. All of the scenes can easily be taken and they can be varied considerably according to your facilities and the available "locations" in your neighborhood for the hoards of the chase.

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AKTRESSES latest 1935 portable double sound recording unit with double exposure recorder, automatic speed control, metal film safety optical unit. Latest type camera motor. New type megaflex. Complete factory guaranteed \$2400. This is the only authentic Aktressex equipment for sale in Hollywood outside factory. Camera Supply Co. Ltd. 1515 Calhoun Blvd. Hollywood Calif.

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WANTED DeBee Model L Camera also Akley Cytis Tripod. Lenses 40, 50, 75. 4 Kenwood. 14000 Park. Burbank Calif.

COMPLETE SOUND TRUCK with extension mixer microphone camera. All complete ready for production. Write Box 254, American Cinematographer.

WANTED Cinematographer for industrial in East—Year round work. State experience and salary expected in August. Box 259, American Cinematographer.

Amateur Movie Contest



Start thinking about your picture for 1936. The contest will close on November 30th.

This contest will be divided differently again. We will endeavor to give wider recognition . . . that is to offer prizes for more classifications.

Each year presents a different problem . . . it is to solve these problems and in an effort to recognize the serious efforts of the amateur that classifications are changed from time to time.

The rules will be the same as last year. You can enter either 8mm or 16mm film. 35mm film will not be accepted in this contest, nor will reductions from 35mm film be allowed.



CONTEST EDITOR
AMERICAN CINEMATOGRAPHER

6331 Hollywood Boulevard

Hollywood, California

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